REMARKS

This application contains claims 1-60. Claims 1, 5, 10, 21, 25, 30, 41, 45 and 50 are hereby amended. No new matter has been introduced. Reconsideration is respectfully requested.

Applicants thank Examiners Rimell and Kim for the courtesy of a personal interview with Applicants' representative, Sanford T. Colb (Reg. No. 26,856), held in the USPTO on November 28, 2006. At the interview, Mr. Colb argued the patentability of the claims in the present patent application over the cited art (Cannon et al., cited below). In the course of the interview, a possible amendment to claim 1 was discussed, in order to clarify the contents of the "predictive record" recited in the claim. The Examiner agreed that the amended claim language would distinguish the present invention over Cannon, on condition that the claim also included the limitation that the predictive record is a bitmap record. While disagreeing with the necessity of the additional "bitmap" limitation, Applicants have amended independent claims 1, 21 and 41 as agreed in the interview in order to expedite prosecution of the application.

Claims 1, 4, 6-9, 12, 13, 17, 24, 26-29, 32, 33, 41, 46-49, 52, 53 and 57 were provisionally rejected for nonstatutory double patenting over U.S. Patent Application 10/673,529. In response to this rejection, Applicants submit herewith a terminal disclaimer with respect to U.S. Patent Application 10/673,529. In view of the disclaimer, this rejection should be withdrawn.

Claims 5, 25 and 45 were rejected under 35 U.S.C. 112, first paragraph, for lack of enablement of the determination that "the specified location is included in the record," which is recited in these claims. Applicants have amended claims 5, 25 and 45 in order to overcome this rejection, by clarifying that a copy of the record is maintained on the primary storage subsystem.

This feature of the invention is recited, for example, in claim 10 as filed. The copy of the record enables the primary storage subsystem to determine that the specified location is included in the record. In view of this amendment, claims 5, 25 and 45 are believed to meet the requirements of 35 U.S.C. 112.

Claims 1-3, 6, 8, 21-23, 26, 28, 41-43, 46 and 48 were rejected under 35 U.S.C. 102(b) over Cannon et al. (U.S. Patent 6,148,412). Applicants have amended independent claims 1, 21 and 41, as agreed in the interview, in order to clarify the distinction of the claimed invention over Cannon.

Claim 1 recites a method for managing a data storage system in which data are stored on non-volatile storage media in both primary and secondary storage subsystems. The method uses a record on the secondary storage subsystem that is predictive of locations to which data are to be written on the primary storage subsystem by a host processor. Upon receiving data from the host processor to be written to a specified location that is not in the record, the primary storage subsystem sends a message to the secondary storage subsystem. When an acknowledgment is received from the secondary storage subsystem indicating that the record has been updated, the primary storage subsystem then signals the host processor that the data have been stored. Otherwise, if the specified location is included in the predictive record, the primary subsystem is able to signal the host processor that the data have been stored when the primary subsystem receives the data from the host, without having to wait for the secondary subsystem to acknowledge that it has received the data, as well.

This method permits the storage system to give the host processor responses to write operations with relatively low latency (paragraph 0009 in the specification). On the other hand, the predictive record

facilitates rapid recovery from failures on the primary subsystem (paragraphs 0007 and 0010).

Claim 1 has been amended, as agreed in the interview, to clarify that the predictive record includes a designation of locations to which the host is expected to write in the near future (as stated explicitly in paragraph 0049 in the published specification of this application, US 2005/0081089). The claim has also been amended, as required by the Examiner, to specify that the record is a bitmap record (as recited in claim 9 as filed). While disagreeing with the need for this added limitation, Applicant has amended the claim in the manner agreed in the interview in order to expedite issuance of a patent on this application. Applicant reserves the right to prosecute broader claims that do not include the "bitmap" limitation.

Cannon describes a system that generates and manages multiple copies of client data files. The system can perform both synchronous and asynchronous back-up generation (col. 8, lines 42-57, cited by the Examiner). There is no description or suggestion in Cannon, however, of any sort of predictive record, let alone a bitmap record maintained on a backup storage subsystem that includes a designation of locations on the primary storage subsystem to which the host is expected to write in the near future, as recited in amended claim 1.

In regard to the first step of claim 1 ("maintaining a record… which is predictive…"), the Examiner cited step 660 in Cannon's Fig. 6B (described in col. 11, lines 63-67). This passage refers to building a list of the files stored on a selected copy storage volume, i.e., a record of information that has already been written to certain locations. There is no suggestion in this passage or elsewhere in Cannon of listing (or otherwise recording) a prediction of locations to which information is yet to be written, as required by claim 1.

Thus, claim 1, as amended, is believed to be patentable over Cannon. In view of the patentability of claim 1, dependent claims 2, 3, 6 and 8 are also believed to be patentable.

Claims 21-23, 26, 28, 41-43, 46 and 48 recite apparatus and computer software products that operate on principles similar to those of the methods of claims 1-3, 6 and 8. Independent claims 21 and 41 have been amended in like manner to claim 1. Claims 21-23, 26, 28, 41-43, 46 and 48 are therefore believed to be patentable for the reasons explained above.

Dependent claims 4, 24 and 44 were rejected under 35 U.S.C. 103(a) over Cannon in view of Micka et al. (U.S. Patent 5,657,440). In view of the patentability of the amended independent claims, these dependent claims are believed to be patentable, as well.

Dependent claims 7, 10, 11, 27, 30, 31, 47, 50 and 51 were rejected under 35 U.S.C. 103(a) over Cannon in view of Kawamura et al. (U.S. Patent Application Publication 2004/0193658). Applicants respectfully traverse this rejection, on the grounds that the present invention was conceived prior to the filing date of Kawamura (August 29, 2003), and that Applicants were diligent in constructive reduction of the invention between August 29, 2003, and September 29, 2003, when the present patent application was filed. Applicants submit herewith a declaration under 37 C.F.R. 1.131 proving this prior conception and diligence. Therefore, Kawamura is disqualified as prior art against the claims in the present patent application.

Applicants have amended claims 10, 30 and 50 to stand as independent claims, incorporating the limitations of the original independent claims from which they formerly depended. In view of the disqualification of Kawamura as prior art, Applicants respectfully submit that newly-independent claims 10, 30 and 50 are

patentable. Dependent claims 7, 11, 27, 31, 47 and 51 are also believed to be patentable in view of the patentability of the independent claims from which they depend.

Claims 9, 12-20, 29, 32-40, 49 and 52-60 were rejected under 35 U.S.C. 103(a) over Cannon in view of one or more of Kawamura et al. (U.S. Patent Application Publication 2004/0193658), Kern et al. (U.S. Patent 5,720,029), Black (U.S. Patent 6,978,324), Dunham (U.S. Patent 6,269,431) and official notice. In view of the patentability of the independent claims in this application, these dependent claims are also believed to be patentable.

Furthermore, Applicants believe that the dependent claims recite independently-patentable subject matter. For the sake of brevity, however, Applicants will refrain from arguing the independent patentability of the dependent claims at present.

Applicants believe the amendments and remarks presented above to be fully responsive to all of the grounds of rejection raised by the Examiner. In view of these amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Prompt notice to this effect is requested.

Please charge any fees associated with this paper to deposit account No. 09-0468.

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